

- 1 What is claimed is:
- 2 1. A probe card assembly comprising:
 - 3 a lower printed circuit board; and
 - 4 a modularized probe head, which is detachable and assembled with the lower printed
 - 5 circuit board, the probe head comprising:
 - 6 a probe head carrier for installing on the lower printed circuit board, and having a
 - 7 stress buffer layer over a downset at the center;
 - 8 a silicon substrate having an exposed surface forming with a plurality of probe tips and
 - 9 contact points and a back surface, wherein the back surface is installed on a stress
 - 10 buffer layer of the probe head carrier; and the contact points are formed on edges of the
 - 11 exposed surface and are electrically connected to the probe tips ;
 - 12 at least a flexible printed circuit board installing on the probe head carrier, the flexible
 - 13 printed circuit board having a first end electrically connecting to the contact points of
 - 14 the probe head and a second end extending away from the probe head carrier.
 - 15 2. The probe card assembly according to claim 1,wherein each of the probe tips has a
 - 16 curved probing point.
 - 17 3. The probe card assembly according to claim 1,wherein the exposed surface of silicon
 - 18 substrate is formed with a stress-absorbing bump for supporting the probe tips.
 - 19 4. A probe card assembly comprising:
 - 20 a stiffener ring having an upper opening and a lower opening;
 - 21 an upper printed circuit board installing on the upper opening of the stiffener ring for
 - 22 electrically connecting to a test head of a tester.
 - 23 a lower printed circuit board installing on the lower opening of the stiffener ring for
 - 24 connecting to a probe head;
 - 25 a plurality of coaxial transmitters installing in the stiffener ring and between the upper
 - 26 and lower printed circuit boards, each of the coaxial transmitter comprising a plurality
 - 27 of coaxial cables, and two ends of each of the coaxial cable combining with cable

1 connectors which connect respectively to the upper printed circuit board and the lower
2 printed circuit board; and

3 a modularized probe head with detachable function and assemble with the lower printed
4 circuit board, and comprising a probe head carrier and a silicon substrate which is
5 installed on the probe head carrier and having an exposed surface forming with a
6 plurality of probe tips.

7 5. The probe card assembly according to claim 4, further comprising at least a flexible
8 printed circuit board connecting to the silicon substrate and extending from the edges of
9 the probe head carrier to electrically connect to the lower printed circuit board.

10 6. The probe card assembly according to claim 4, wherein the upper printed circuit board
11 has a central opening for installing, adjusting, or fixing coaxial transmitters.

12 7. The probe card assembly according to claim 4, wherein each of the probe tips has a
13 curved probing point.

14 8. The probe card assembly according to claim 4, wherein the exposed surface of silicon
15 substrate is formed with a stress-absorbing bump for supporting the probe tips.

16 9. The probe card assembly according to claim 4, wherein the probe head carrier has a
17 stress buffer layer made on the downset for bonding with the silicon substrate.

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